

REMARKS

Claims 1-8 were examined and reported in the Office Action. Claims 1-8 are rejected. Claims 1-8 are amended. Claims 1-8 remain.

Applicant requests reconsideration of the application in view of the following remarks.

I. 35 U.S.C. § 112, first paragraph

It is asserted in the Office Action that claim 6 is rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Applicant has amended claim 6 to overcome the 35 U.S.C. § 112, first paragraph rejection.

Accordingly, withdrawal of the 35 U.S.C. § 112 rejection for claim 6 is respectfully requested.

II. 35 U.S.C. § 112, second paragraph

It is asserted in the Office Action that claims 1-8 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has amended the claims to overcome the 35 U.S.C. § 112, second paragraph rejections.

Accordingly, withdrawal of the 35 U.S.C. § 112 rejection for claims 1-8 is respectfully requested.

III. 35 U.S.C. § 102(b)

A. It is asserted in the Office Action that claims 1-2 and 6-8 are rejected under 35 U.S.C. § 102(b), as being anticipated by Sim (KR 2002024876A). Applicant respectfully traverses the aforementioned rejection for the following reasons.

According to MPEP §2131, "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.' (Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628,

631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)). 'The identical invention must be shown in as complete detail as is contained in the ... claim.' (Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)). The elements must be arranged as required by the claim, but this is not an ipsissimis verbis test, *i.e.*, identity of terminology is not required. (In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990))."

Applicant's amended claim 1 contains the limitations of "[a]n apparatus for receiving a signal of digital broadcasting service, comprising: an array antenna having a plurality of antenna elements, each antenna element for receiving broadcast signals from the digital broadcasting service; a demodulation means for demodulating the broadcast signals, each corresponding to each of antenna elements included in the array antenna; a beam-forming means for receiving modulated signals of the demodulation means to generate a predetermined number of beamformed signals based on different beam-forming weights in order to steer each of the predetermined number of beamformed signals to a predetermined direction according to the modulated signals; and a beam selection means for selecting one of the predetermined number of beamformed signals based on each predetermined direction of the predetermined number of beamformed signals, wherein the selected beamformed signal has the most desirable direction."

Applicant's amended claim 6 contains the limitations of "[a]n apparatus for receiving a signal of digital broadcasting service, comprising: switched beamforming means for generating a beamformed signal in order to direct a predetermined number of angles by applying a beam-forming weight to a received signal from the digital broadcasting service and selectively receiving a signal of a desired direction; and beam selection means for selectively receiving the signal of desired direction according to a predetermined number of beam forming signals."

Applicant's claimed invention provides a digital broadcasting receiver for improving reception ability of a digital broadcasting service by switched beam-forming means.

Sim discloses a switching beam array system for a CDMA system to generate an optimum beam pattern according to an environmental change of a telecommunication system by minimizing the influence of interference signals using the temporal/spatial processes. Sim also discloses a receiver having an array antenna. Sim is distinguishable, however, as Sim does not teach, disclose or suggest "a beam-forming means for receiving modulated signals of the demodulation means to generate a predetermined number of beamformed signals based on different beam-forming weights in order to steer each of the predetermined number of beamformed signals to a predetermined direction according to the modulated signals."

Further, Sim discloses a switching beam array system for a CDMA system, whereas Applicant's claimed invention discloses a digital broadcasting receiver. Though both Sim and Applicant's claimed invention disclose a plurality of antenna elements, the antenna used for a CDMA system and the antenna used for the digital broadcasting system are completely different.

Moreover, for the beam-forming means, Sim performs time-processing and space-processing on signals transmitted from the array antenna and then selects a beam of a signal having the smallest interference. Applicant's claimed invention, however, performs space-processing on signals transmitted from the decoding means and then selects a beam by eliminating multi-path signals. Time-processing is performed on the selected beam. Sim simply does not teach a receiver for improving reception ability of a digital broadcasting service by switched beam-forming means.

Therefore, since Sim does not disclose, teach or suggest all of Applicant's amended claims 1 and 6 limitations, as listed above, Applicant respectfully asserts that a *prima facie* rejection under 35 U.S.C. § 102(b) has not been adequately set forth relative to Sim. Thus, Applicant's amended claims 1 and 6 are not anticipated by Sim.

Additionally, the claims that directly or indirectly depend on claims 1 and 6, namely claims 2, and 7-8, respectively, are also not anticipated by Sim for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 102(b) rejection for claims 1-2 and 6-8 is respectfully requested.

B. It is asserted in the Office Action that claims 1-3 and 6-7 are rejected under 35 U.S.C. § 102(b), as being anticipated by U.S. Patent No. 6,377,783 issued to Lo ("Lo"). Applicant respectfully traverses the aforementioned rejection for the following reasons.

Lo discloses a method for combining communication beams in a wireless communication system. Lo, however, does not teach, disclose or suggest a signal process for demodulating and selecting the received broadcast signals input by a plurality of antenna elements. Further, Lo discloses a method for combining communication beams in a wireless communication system and a digital signal processor applies weights and combines primary and secondary beams before modulating. Applicant's claimed invention, however, modulates signals and performs beam-forming and then selects a beam. Therefore, Lo does not teach, disclose or suggest a receiver for improving reception ability of digital broadcasting service by switched beam-forming. That is, Lo does not teach, disclose or suggest "[a]n apparatus for receiving a signal of digital broadcasting service, comprising: an array antenna having a plurality of antenna elements, each antenna element for receiving broadcast signals from the digital broadcasting service; a demodulation means for demodulating the broadcast signals, each corresponding to each of antenna elements included in the array antenna; a beam-forming means for receiving modulated signals of the demodulation means to generate a predetermined number of beamformed signals based on different beam-forming weights in order to steer each of the predetermined number of beamformed signals to a predetermined direction according to the modulated signals; and a beam selection means for selecting one of the predetermined number of beamformed signals based on each predetermined direction of the predetermined number of beamformed signals, wherein the selected beamformed signal has the most desirable direction," or "switched beamforming means for generating a beamformed signal in order to direct a predetermined number of angles by

applying a beam-forming weight to a received signal from the digital broadcasting service and selectively receiving a signal of a desired direction; and beam selection means for selectively receiving the signal of desired direction according to a predetermined number of beam forming signals.”

Therefore, since Lo does not disclose, teach or suggest all of Applicant’s amended claims 1 and 6 limitations, as listed above, Applicant respectfully asserts that a *prima facie* rejection under 35 U.S.C. § 102(b) has not been adequately set forth relative to Lo. Thus, Applicant’s amended claims 1 and 6 are not anticipated by Lo. Additionally, the claims that directly or indirectly depend on claims 1 and 6, namely claims 2, and 7, respectively, are also not anticipated by Lo for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 102(b) rejection for claims 1-3 and 6-7 is respectfully requested.

C. It is asserted in the Office Action that claims 1-3 and 6-7 are rejected under 35 U.S.C. § 102(b), as being anticipated by U.S. Patent No. 6,018,317A issued to Dogan (“Dogan”). Applicant respectfully traverses the aforementioned rejection for the following reasons.

Dogan discloses a method and an apparatus for processing co-channel signals received at a sensor array in a cumulant-based signal processing and separation engine to obtain a desired set of output signals or parameters. Dogan further discloses a sensor array and an antenna array (Dogan, Fig. 8) and requires a receiver bank for storing signals from the antennas. Distinguishable, Applicant’s claimed invention discloses an array antenna connected to decoding means directly without storing means, such as a receiver bank. (See Applicant’s Fig. 2.). Dogan does not teach, disclose or suggest a receiver for improving reception ability of digital broadcasting service by switched beam-forming. That is, Dogan does not teach, disclose or suggest “[a]n apparatus for receiving a signal of digital broadcasting service, comprising: an array antenna having a plurality of antenna elements, each antenna element for receiving broadcast signals from the digital broadcasting service; a demodulation means for demodulating the broadcast signals, each corresponding to each of antenna elements included in the array

antenna; a beam-forming means for receiving modulated signals of the demodulation means to generate a predetermined number of beamformed signals based on different beam-forming weights in order to steer each of the predetermined number of beamformed signals to a predetermined direction according to the modulated signals; and a beam selection means for selecting one of the predetermined number of beamformed signals based on each predetermined direction of the predetermined number of beamformed signals, wherein the selected beamformed signal has the most desirable direction," or "switched beamforming means for generating a beamformed signal in order to direct a predetermined number of angles by applying a beam-forming weight to a received signal from the digital broadcasting service and selectively receiving a signal of a desired direction; and beam selection means for selectively receiving the signal of desired direction according to a predetermined number of beam forming signals."

Therefore, since Dogan does not disclose, teach or suggest all of Applicant's amended claims 1 and 6 limitations, as listed above, Applicant respectfully asserts that a *prima facie* rejection under 35 U.S.C. § 102(b) has not been adequately set forth relative to Dogan. Thus, Applicant's amended claims 1 and 6 are not anticipated by Dogan. Additionally, the claims that directly or indirectly depend on claims 1 and 6, namely claims 2, and 7, respectively, are also not anticipated by Dogan for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 102(b) rejection for claims 1-3 and 6-7 is respectfully requested.

D. It is asserted in the Office Action that claims 1 and 4-7 are rejected under 35 U.S.C. § 102(b), as being anticipated by U.S. Patent No. 6,018,316 issued to Rudish ("Rudish"). Applicant respectfully traverses the aforementioned rejection for the following reasons.

Rudish discloses achieving a reduction of interference between a plurality of broadcast signals by using particular style feed elements. Applicant's claimed invention focuses a selection of the broadcast signals based on each direction included

in each of the broadcast signals, not by the reduction of the interference between the broadcast signals.

Further, Rudish does not teach, disclose or suggest “[a]n apparatus for receiving a signal of digital broadcasting service, comprising: an array antenna having a plurality of antenna elements, each antenna element for receiving broadcast signals from the digital broadcasting service; a demodulation means for demodulating the broadcast signals, each corresponding to each of antenna elements included in the array antenna; a beam-forming means for receiving modulated signals of the demodulation means to generate a predetermined number of beamformed signals based on different beam-forming weights in order to steer each of the predetermined number of beamformed signals to a predetermined direction according to the modulated signals; and a beam selection means for selecting one of the predetermined number of beamformed signals based on each predetermined direction of the predetermined number of beamformed signals, wherein the selected beamformed signal has the most desirable direction,” or “switched beamforming means for generating a beamformed signal in order to direct a predetermined number of angles by applying a beam-forming weight to a received signal from the digital broadcasting service and selectively receiving a signal of a desired direction; and beam selection means for selectively receiving the signal of desired direction according to a predetermined number of beam forming signals.”

Therefore, since Rudish does not disclose, teach or suggest all of Applicant’s amended claims 1 and 6 limitations, as listed above, Applicant respectfully asserts that a *prima facie* rejection under 35 U.S.C. § 102(b) has not been adequately set forth relative to Rudish. Thus, Applicant’s amended claims 1 and 6 are not anticipated by Rudish. Additionally, the claims that directly or indirectly depend on claims 1 and 6, namely claims 4-5, and 7, respectively, are also not anticipated by Rudish for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 102(b) rejection for claims 1 and 4-7 is respectfully requested.

IV. 35 U.S.C. § 103(a)

It is asserted in the Office Action that claims 1, 3 and 6-7 are rejected under 35 U.S.C. § 103(a), as being unpatentable over *Angular diversity based on beam switching of circular arrays for HIPERLAN terminals* by Chelouah, A. et al. ("Chelouah"). Applicant respectfully traverses the aforementioned rejection for the following reasons.

According to MPEP §2142 "[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." (*In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). Further, according to MPEP §2143.03, "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (*In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." "All words in a claim must be considered in judging the patentability of that claim against the prior art." (*In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), emphasis added.)

Chelouah discloses beam switched angular diversity of a circular array for HIPERLAN terminals. Chelouah is directed to solving problems with wireless data networks. Chelouah does not teach disclose or suggest a device for receiving a signal from a digital broadcasting service. That is, Chelouah does not teach, suggest or disclose "[a]n apparatus for receiving a signal of digital broadcasting service, comprising: an array antenna having a plurality of antenna elements, each antenna element for receiving broadcast signals from the digital broadcasting service; a demodulation means for demodulating the broadcast signals, each corresponding to each of antenna elements included in the array antenna; a beam-forming means for receiving modulated signals of the demodulation means to generate a predetermined number of beamformed signals based on different beam-forming weights in order to

steer each of the predetermined number of beamformed signals to a predetermined direction according to the modulated signals; and a beam selection means for selecting one of the predetermined number of beamformed signals based on each predetermined direction of the predetermined number of beamformed signals, wherein the selected beamformed signal has the most desirable direction," or "switched beamforming means for generating a beamformed signal in order to direct a predetermined number of angles by applying a beam-forming weight to a received signal from the digital broadcasting service and selectively receiving a signal of a desired direction; and beam selection means for selectively receiving the signal of desired direction according to a predetermined number of beam forming signals."

Moreover, by viewing the disclosure of Chelouah, one can not jump to the conclusion of obviousness without impermissible hindsight. According to MPEP 2142, [t]o reach a proper determination under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical 'person of ordinary skill in the art' when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention 'as a whole' would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the 'differences,' conduct the search and evaluate the 'subject matter as a whole' of the invention. The tendency to resort to 'hindsight' based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." Applicant submits that without first reviewing Applicant's disclosure, no thought, whatsoever, would have been made to a receiver for improving reception ability of a digital broadcasting service by switched beam-forming means.

Chelouah does not teach, disclose or suggest all the limitations contained in Applicant's amended claims 1 and 6, as listed above. Since Chelouah does not teach, disclose or suggest all the limitations of Applicant's amended claims 1 and 6, as listed above, there would not be any motivation to arrive at Applicant's claimed invention. Thus, Applicant's amended claims 1 and 6 are not obvious over Chelouah in view of no

other prior art since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claims that directly or indirectly depend from amended claims 1 and 6, namely claims 3, and 7, respectively, would also not be obvious over Chelouah in view of no other prior art for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) rejections for claims 1, 3 and 6-7 are respectfully requested.

CONCLUSION

In view of the foregoing, it is submitted that claims 1-8 patentably define the subject invention over the cited references of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes a telephone conference would be useful in moving the case forward, he is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly, extension of time fees.

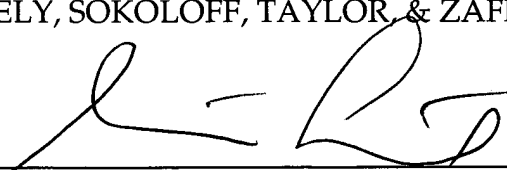
PETITION FOR EXTENSION OF TIME

Per 37 C.F.R. 1.136(a) and in connection with the Office Action mailed on July 23, 2004, Applicant respectfully petitions the Commissioner for a two (2) month extension of time, extending the period for response to December 23, 2004. The Commissioner is hereby authorized to charge payment to Deposit Account No. 02-2666 in the amount of \$225.00 to cover the petition filing fee for a 37 C.F.R. 1.17(a)(2) small entity. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR, & ZAFMAN LLP

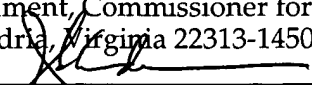
Dated: December 23, 2004

By: 
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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail with sufficient postage in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P. O. Box 1450, Alexandria, Virginia 22313-1450 on December 23, 2004.


Jean Svoboda